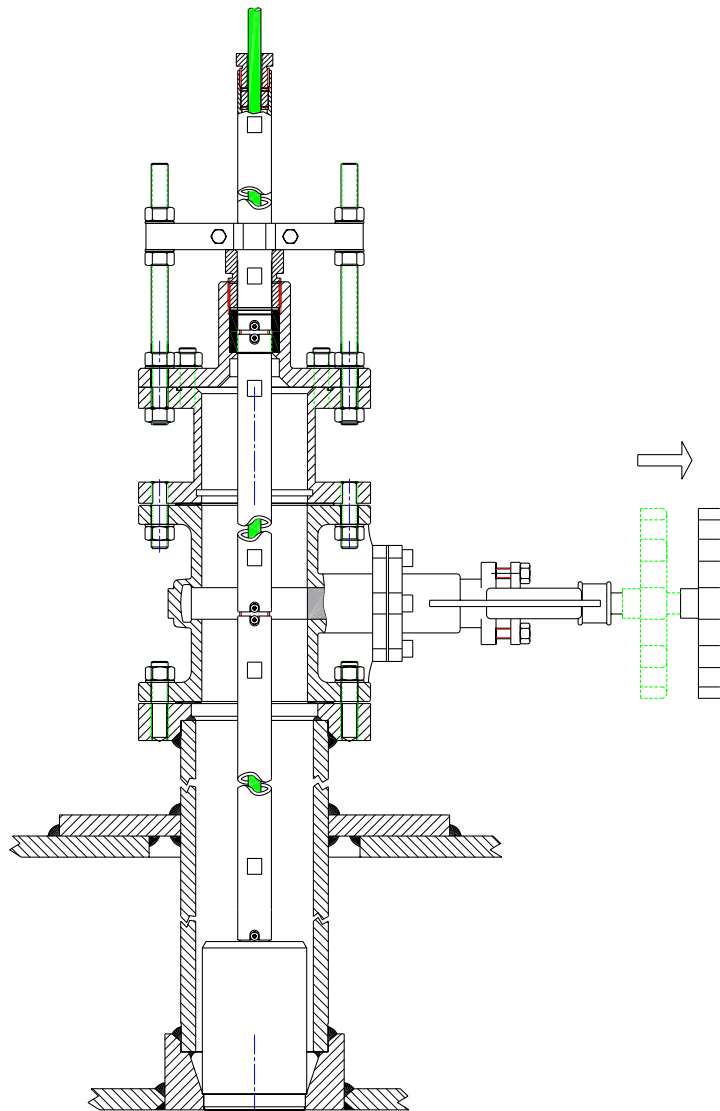


SKIPPER

Double Bottom Sea Valve

DB-100-SA

Operation and Installation Manual



SKIPPER Electronics AS
Enebakkveien 150
P. O. Box 151, Manglerud
0612 Oslo, Norway
www.skipper.no

Telephone: +47 23 30 22 70
Telefax: +47 23 30 22 71
E-mail: support@skipper.no
Co. reg. no: NO-965378847-MVA

Document no: **DM-BDB100-SA** Rev 1003A
Edition: 20151125

Weitergabe sowie vervielfältigung dieser unterlage, verwertung und mitteilung ihres inhaltes nicht gestattet, soweit nicht ausdrücklich zugestanden. Zuwiderhandlungen verpflichten zu schadenersatz.

Toute communication ou reproduction de ce document, toute exploitation ou communication de ou son contenu sont interdites, sauf autorisation expresse. Tout manquement à cette règle est illicite et expose son auteur au versement de dommages et intérêts.

Copying of this document, and giving it to others and the use or communication of contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages.

Sin nuestra expresa autorización, queda terminantemente prohibida la reproducción total o parcial de este documento, así como su uso Indebido y/o su exhibición o comunicación a terceros. De los infractores Se exigirá el correspondiente resarcimiento de daños y perjuicios.

Contents

1. Installation.....	4
2. Space considerations.....	6
3. Intermediate Tube	7
4. Blanking plate.....	8
5. Welding the bottom flange.....	9
6. Sea Valve Assembly.....	11
7. Assembling of first extension tube and sensor.....	12
8. Sensor installation.....	13
9. Clamp Unit mounting	14
10. Extension tube mounting order.....	15
11. Final assembly.....	17
12. Sensor removal.....	18
13. Re-installation.....	19
14. DB-100 Sensors	20
15. 100 mm Double Bottom Sea Valve.....	21

SKIPPER DB (Double Bottom) Sea Valve 100 mm

1. Installation

The SKIPPER DB Sea Valve 100 mm is used for installation of:

1. Echo Sounder transducer type (50 and 200 kHz).
2. DL850 (270 kHz) Doppler Log.
3. DL2 and DL21 Speed Log.

Caution!

Be aware that the Sea Valve contains high precision parts and therefore proper handling when mounting is essential for the final result.

When handling the Sea Valve, all lifting devices must be attached on the outside of the valve. It is very important to not insert any chains, wire, rope or any other device into the valve chamber. This to avoid damaging and any kind of pollution of the Sea Valve.

The SKIPPER DB Sea Valve 100 mm is delivered partly assembled for transport. The parts necessary for final assembly will be found packed in a box delivered with the Sea Valve. First of all, it must be decided where the Sea Valve should be installed. Normally, this will be in the fore part of the ship, in the centerline, or as close to the centerline as possible. Optimal system operation is achieved by fitting the transducer/sensor as deep as possible on the hull.

- The active surface of the sensor must be installed with front face a maximum of +/-1 degree to the ships horizontal plane. (Speed Logs).
- The active surface of the transducer must be installed with front face a maximum of +/-7 degree to the ships horizontal plane. (Echo Sounder).

Do not mount transducers close to the bow thruster propeller outlets, or aft of other hull installations (outlets, vents or other protruding details) that may create aeration or turbulence.

It is necessary to select a part of the hull that is submerged and free from turbulence and aeration under all load and speed conditions, and to avoid positions where air is trapped in heavy weather.

If a flat, horizontal section is not available for transducer fitting, the shipyard must construct a suitable bed. Welding seams in this area should be smoothed and rounded off, in order not to create turbulence or aeration at speed.

Protect the active element of the transducer/sensors during transport and installation, and **do not paint the surface.**

The Sea Valve should be placed in a service accessible place, large enough for installation and disassembly of the Sea Valve and sensor unit. See drawing: "Space considerations".

Important

”Sensors for Speed Log and Echo Sounder are delivered with a fixed cable. Attention must be taken to allow easy replacement/pulling of new cable during maintenance”.

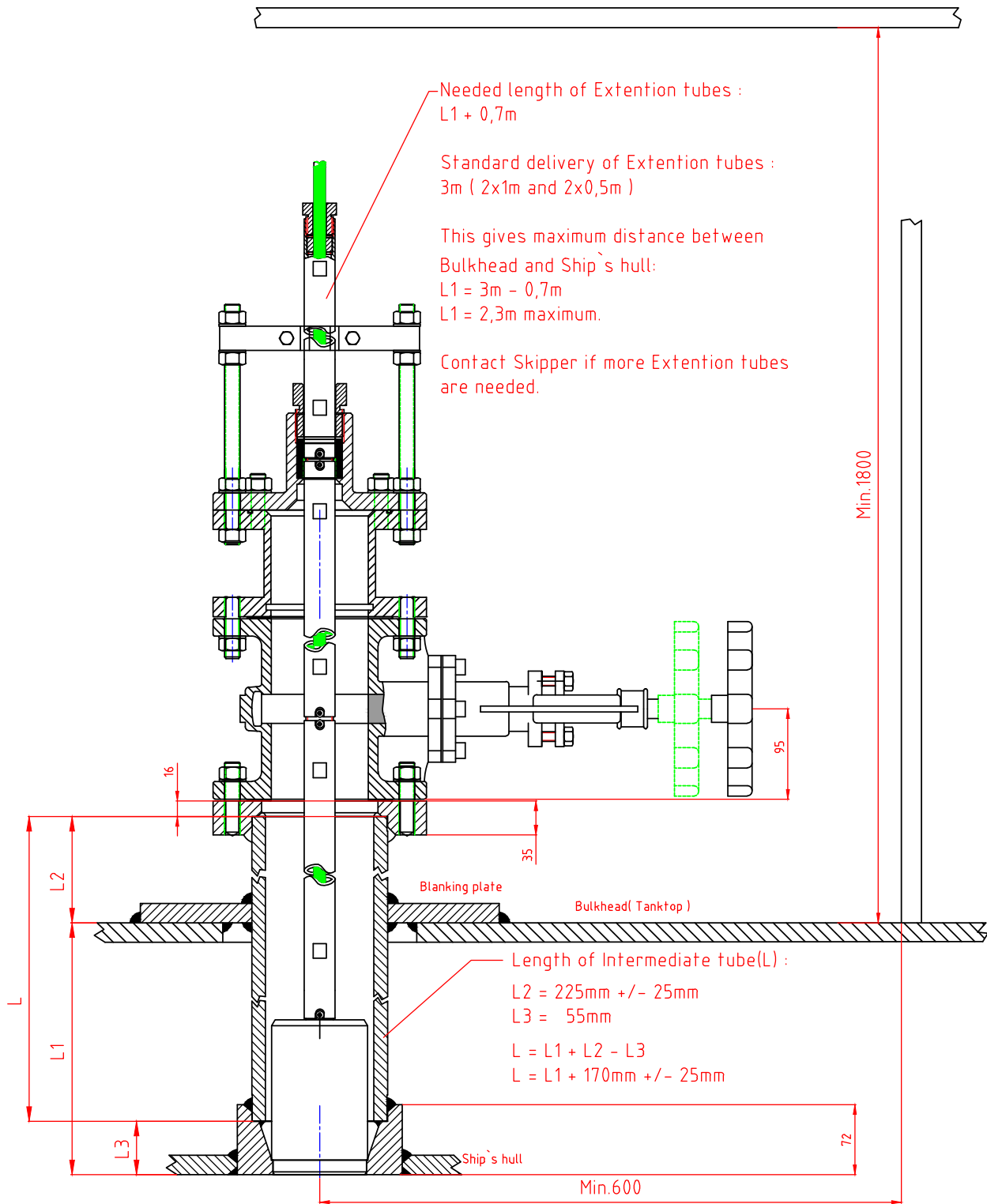
SKIPPER Electronics AS will recommend installation positions if GA-drawings (General arrangements), lines drawings and frame drawings are made available for study.

Condition.

The welding to hull structures and structural support of the items may be subject to separate approval by classification societies for each installation on board a ship.

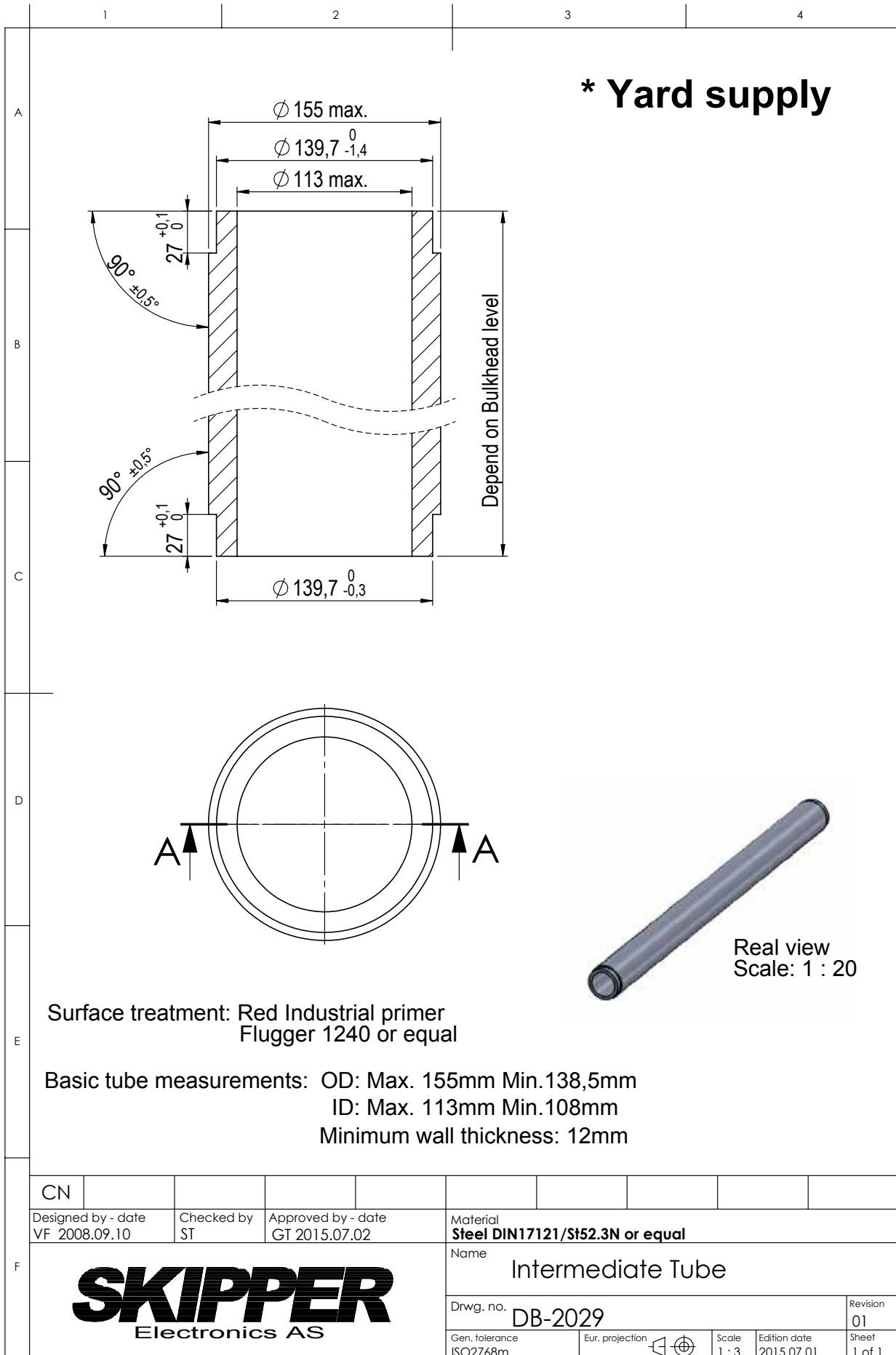
Note: All “Item (X)” references on the following pages, can be found on drawing 100 mm Double Bottom Sea Valve.

2. Space considerations

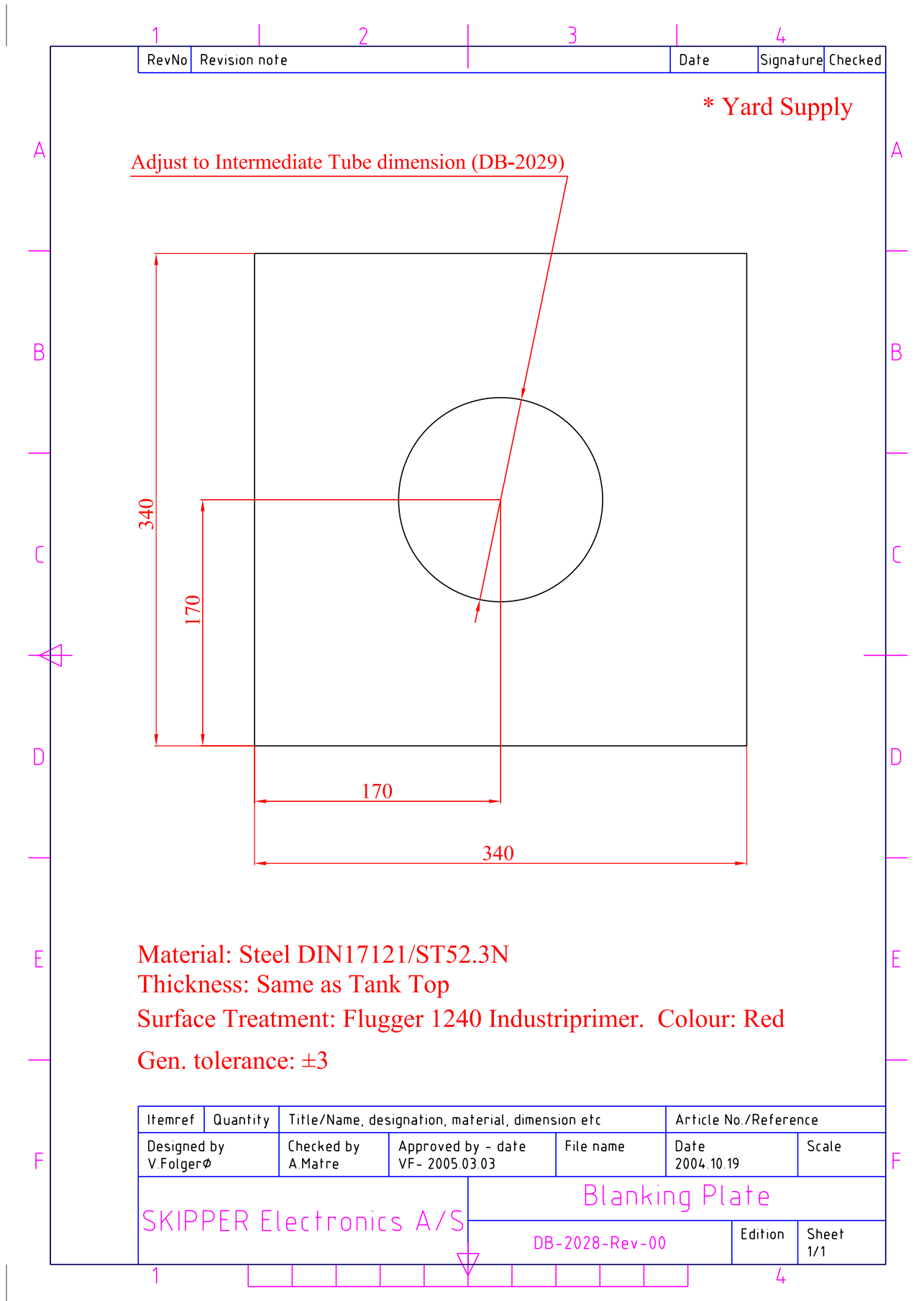


The Sea Valve should be placed in a service accessible place, large enough for installation and disassembly of the sensor unit.

3. Intermediate Tube



4. Blanking plate



5. Welding the bottom flange

- When the position has been decided, a 170 mm hole is cut in the hull, and a (200 mm) hole is cut in the bulkhead (tanktop).
- The bottom flange, Item (1) is welded into the hull. Standard welding practice, methods and procedures should be observed, but may vary. (See welding notes).

Attention:

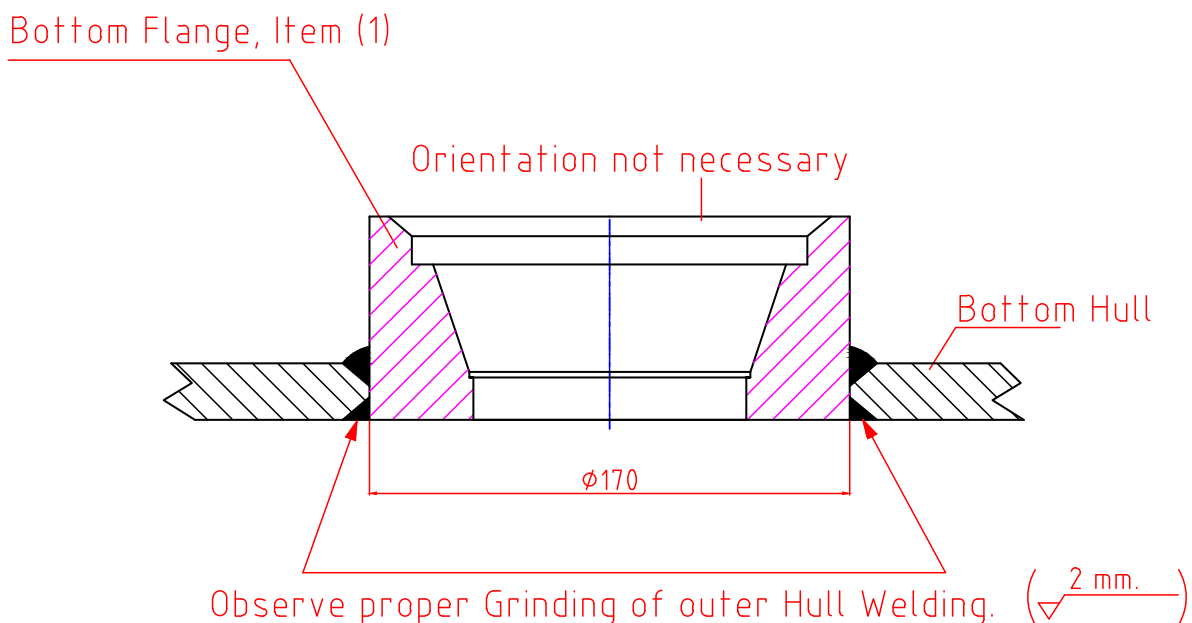
The bottom flange is a part of the Sea Valve that is machined with high accuracy and it should be protected after mounting to avoid damage to the bottom flange surfaces. This to avoid leakage. If the valve is pre-mounted, be sure to protect the valve from being polluted by welding debris.

WELDING NOTES!

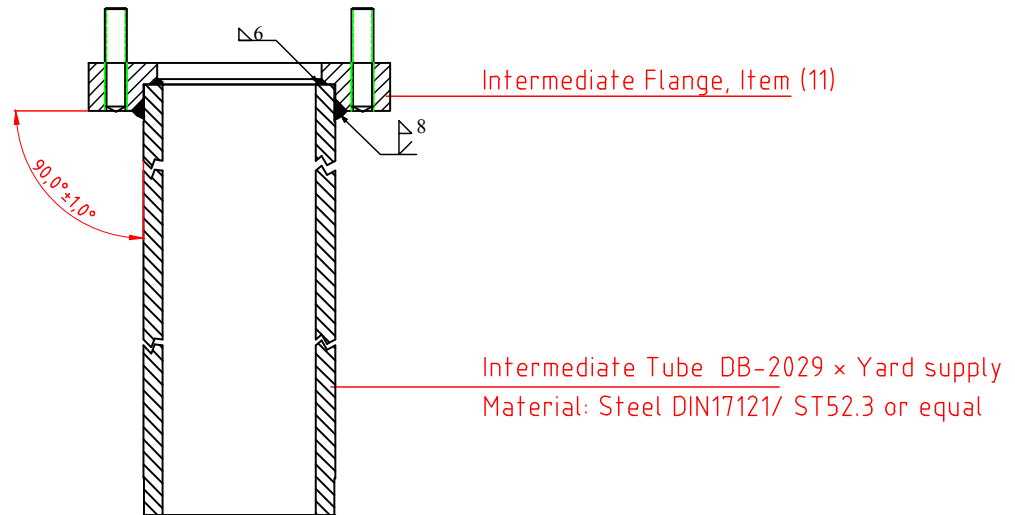
All bottom parts and flanges for welding are precisely machined parts. During welding of these parts to the ship's hull plates, careful attention must be paid to avoid construction strain on the bottom parts and flanges.

- Let parts cool down during welding.
- Over heating may change fit and form and result in non-conformity with intended sensor/transducer.
- Welding to thick hull steel plates will exert high stress on bottom parts and flanges.
- Especially care must be taken during welding of stainless steel flanges.
- Work must be performed by a qualified and certified welder.

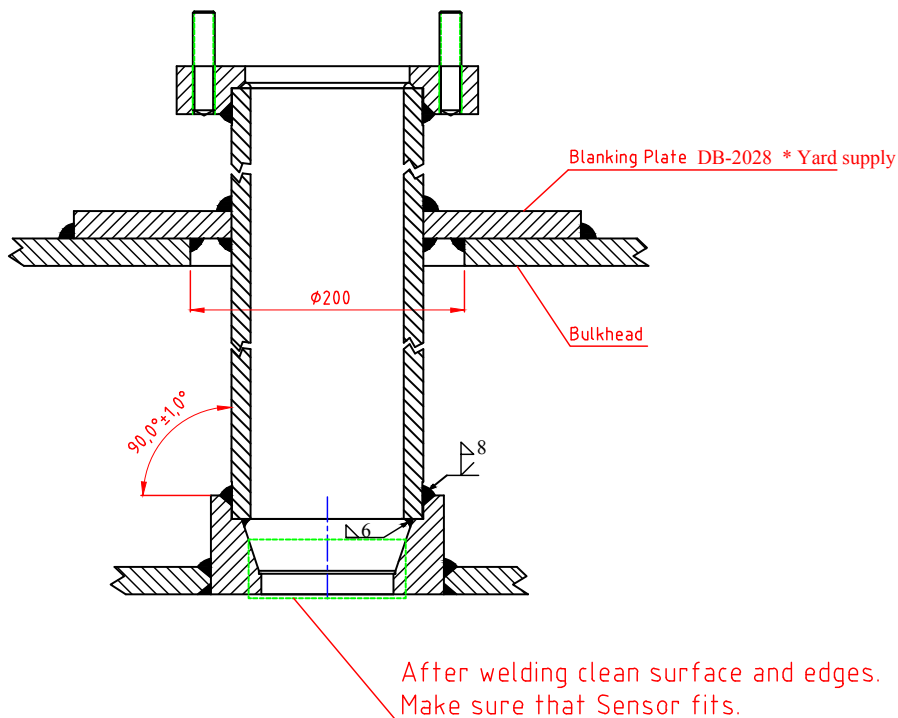
Welding the Bottom Flange in Ship's Hull



- Intermediate Flange, Item (11) is welded into Intermediate Tube, Item (10) (*Yard supply).
- Standard welding practice, methods and procedures should be observed. (See welding notes).

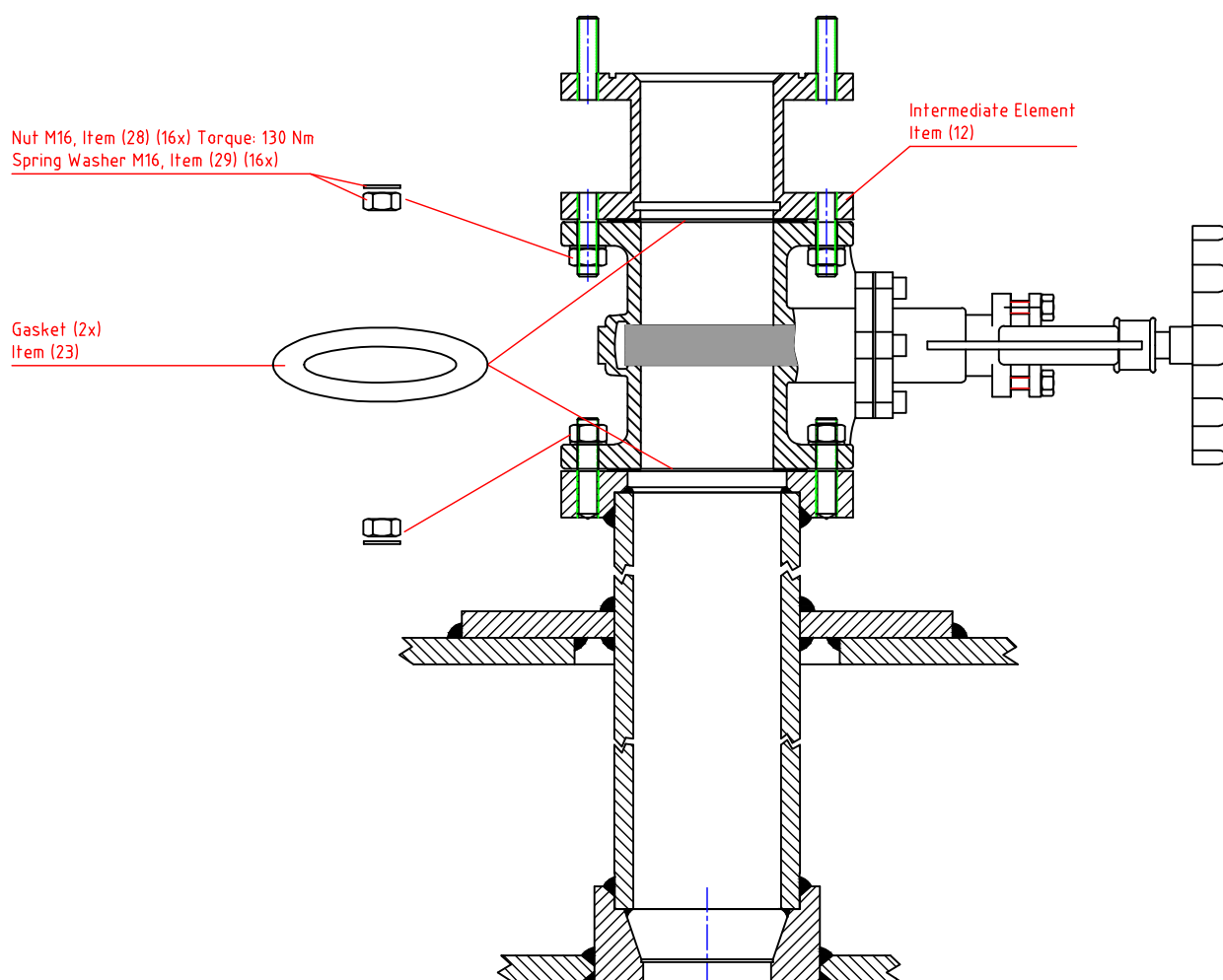


- Blanking Plate, Item (9) (*Yard supply) is placed over the 200 mm hole in the bulkhead.
- Intermediate Tube, Item (10) is tread into the Blanking Plate, Item (9) and through the 200 mm hole in the bulkhead.
- Standard welding practice, methods and procedures should be observed. (See welding notes).

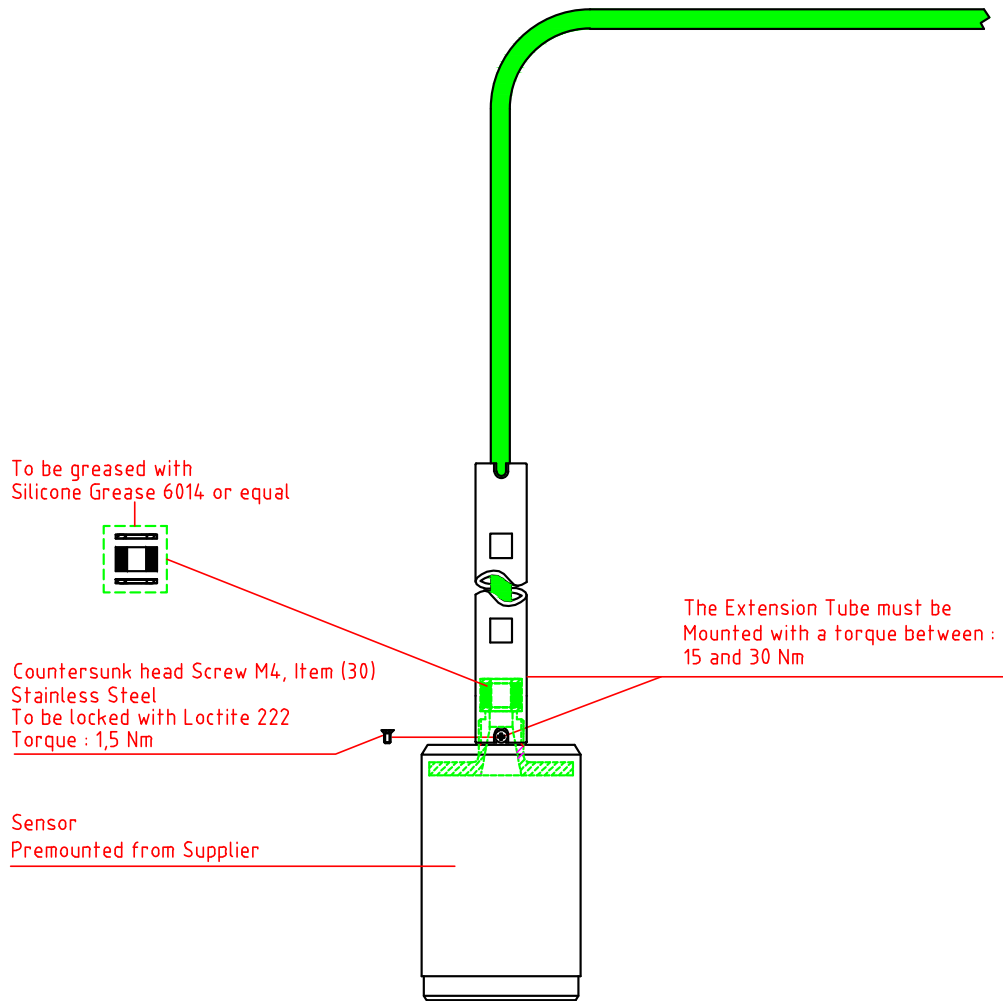


6. Sea Valve Assembly

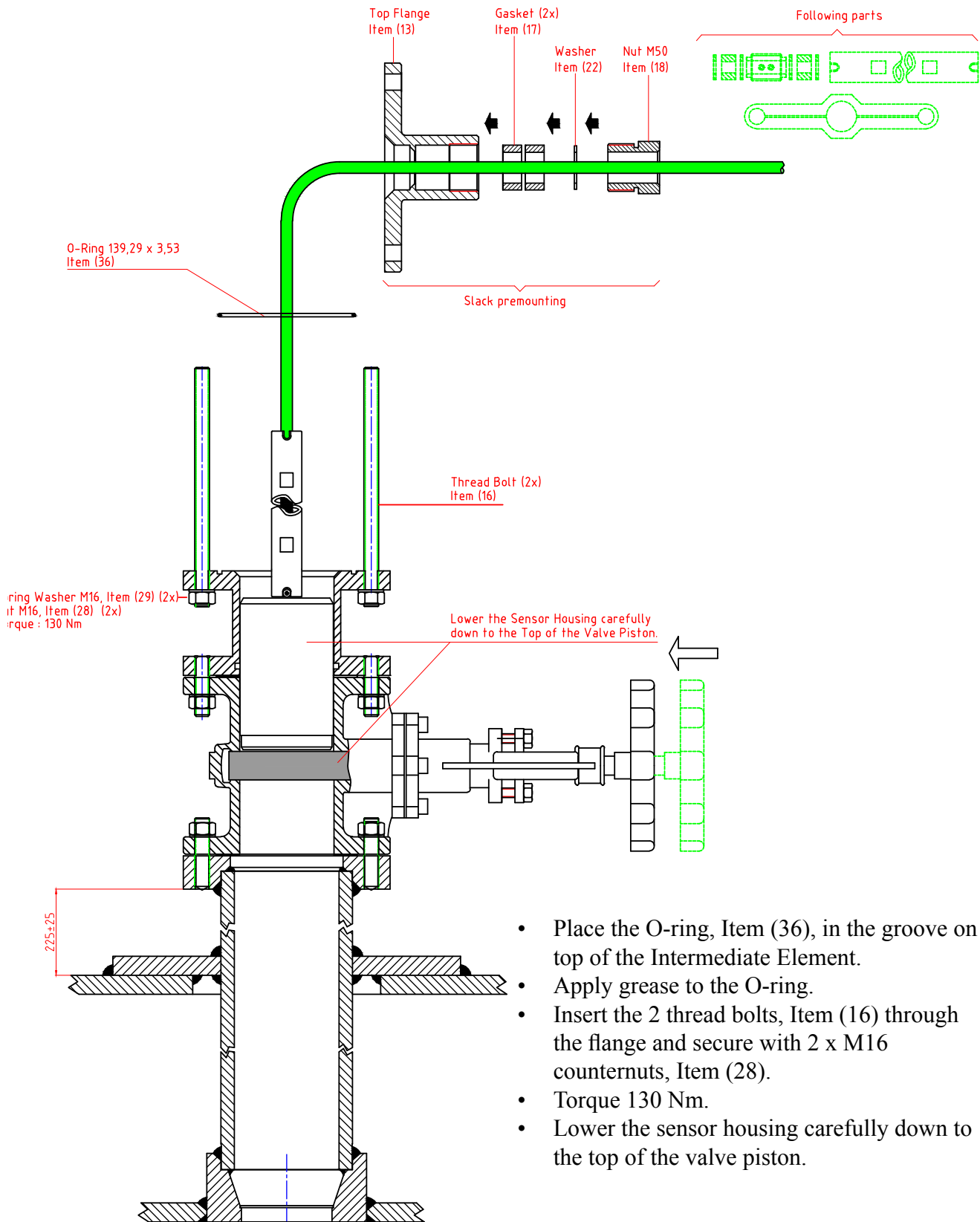
- Place 1.5 mm Klingersil gasket, Item (23) on top of Intermediate Flange, Item (11).
- Then place the Valve element on top of the Intermediate Flange. The 16 mm nuts and washers should be mounted and tightened. (Align parts before tighten nuts).
- Place a 1.5 mm Klingersil gasket on top of the Valve element.
- Mount the intermediate element, Item (12) on top of the Valve element.
- The flange with only 6 pinbolts to be upwards.
- All 8 nuts and washers should be mounted, and tightened. (Align parts before tighten nuts).



7. Assembling of first extension tube and sensor



8. Sensor installation



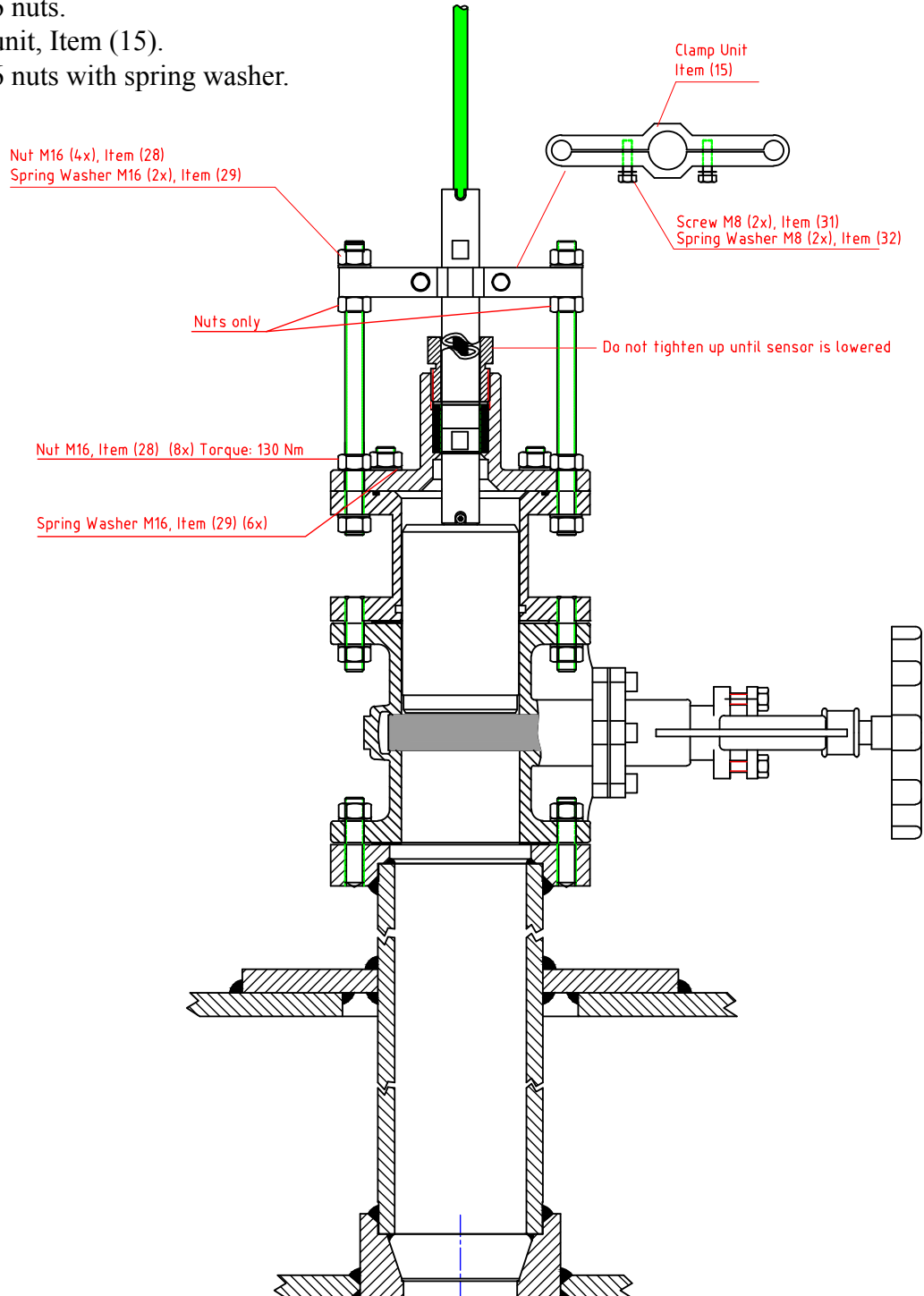
- Place the O-ring, Item (36), in the groove on top of the Intermediate Element.
- Apply grease to the O-ring.
- Insert the 2 thread bolts, Item (16) through the flange and secure with 2 x M16 counternuts, Item (28).
- Torque 130 Nm.
- Lower the sensor housing carefully down to the top of the valve piston.

9. Clamp Unit mounting

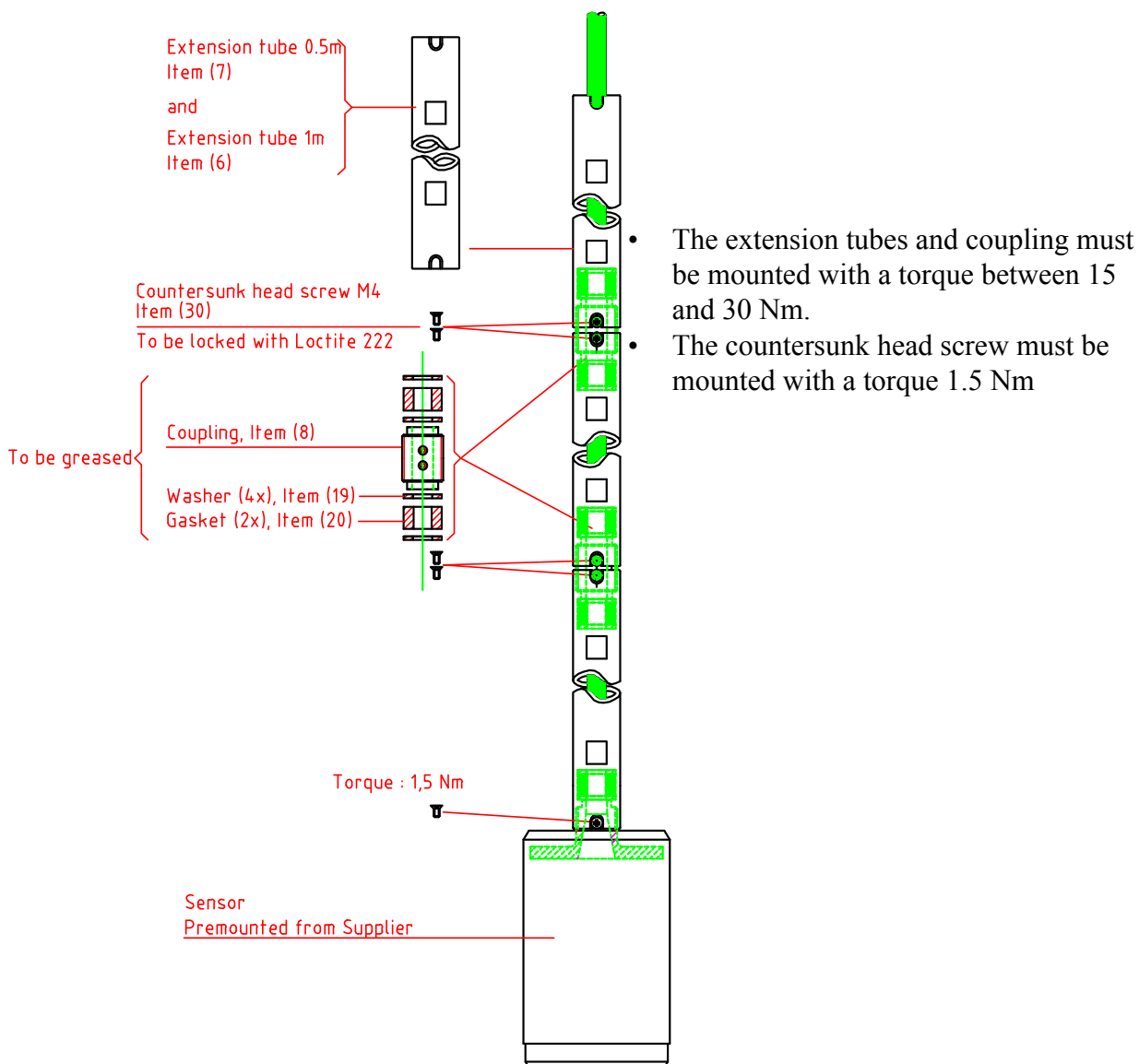
Mount Top Flange, Item (13). Secure with 8 each washers and nuts. Torque: 130 Nm.

Mount in following order:

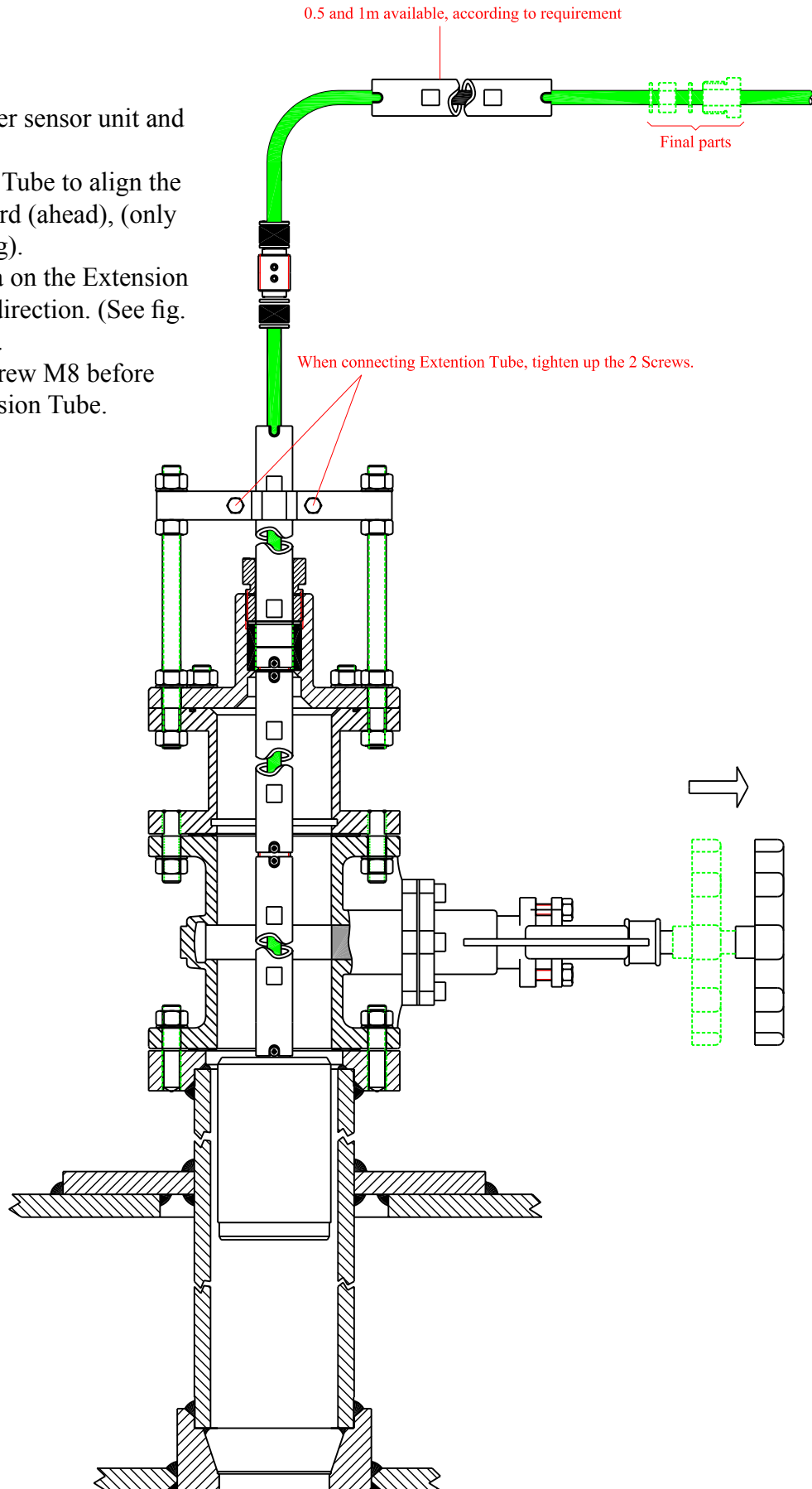
- 2 x gasket, Item (17).
- Washer, Item (22).
- Nut M50, Item (18).
- 2 x M16 nuts.
- Clamp unit, Item (15).
- 2 x M16 nuts with spring washer.



10. Extension tube mounting order



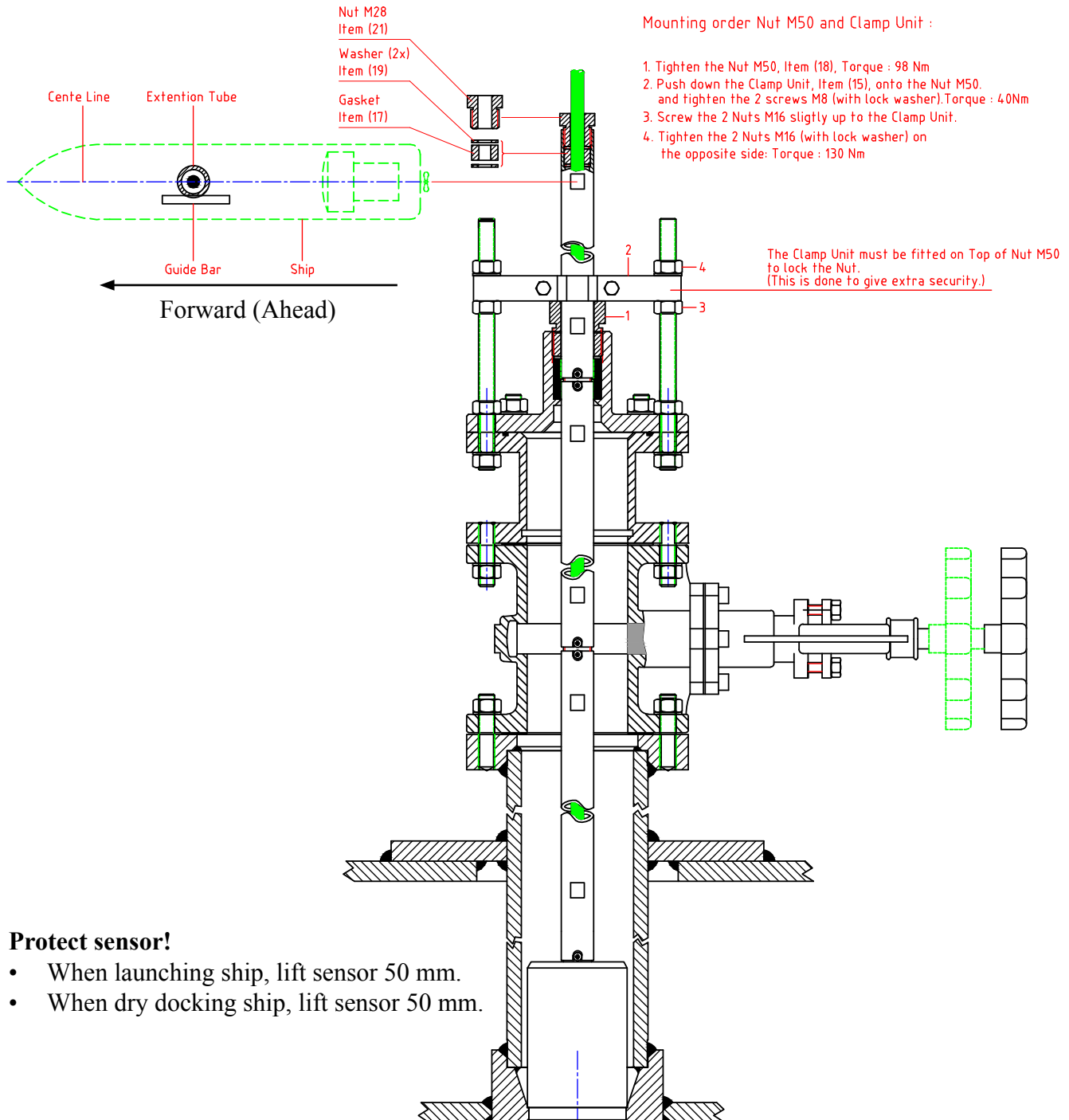
- Open Sea Valve, lower sensor unit and first Extension Tube.
- Rotate the Extension Tube to align the sensor to point forward (ahead), (only needed for Speed Log).
- Use the flattened area on the Extension Tube to find correct direction. (See fig. "11. Final assembly").
- Tighten up the 2 x screw M8 before mounting next Extension Tube.



11. Final assembly

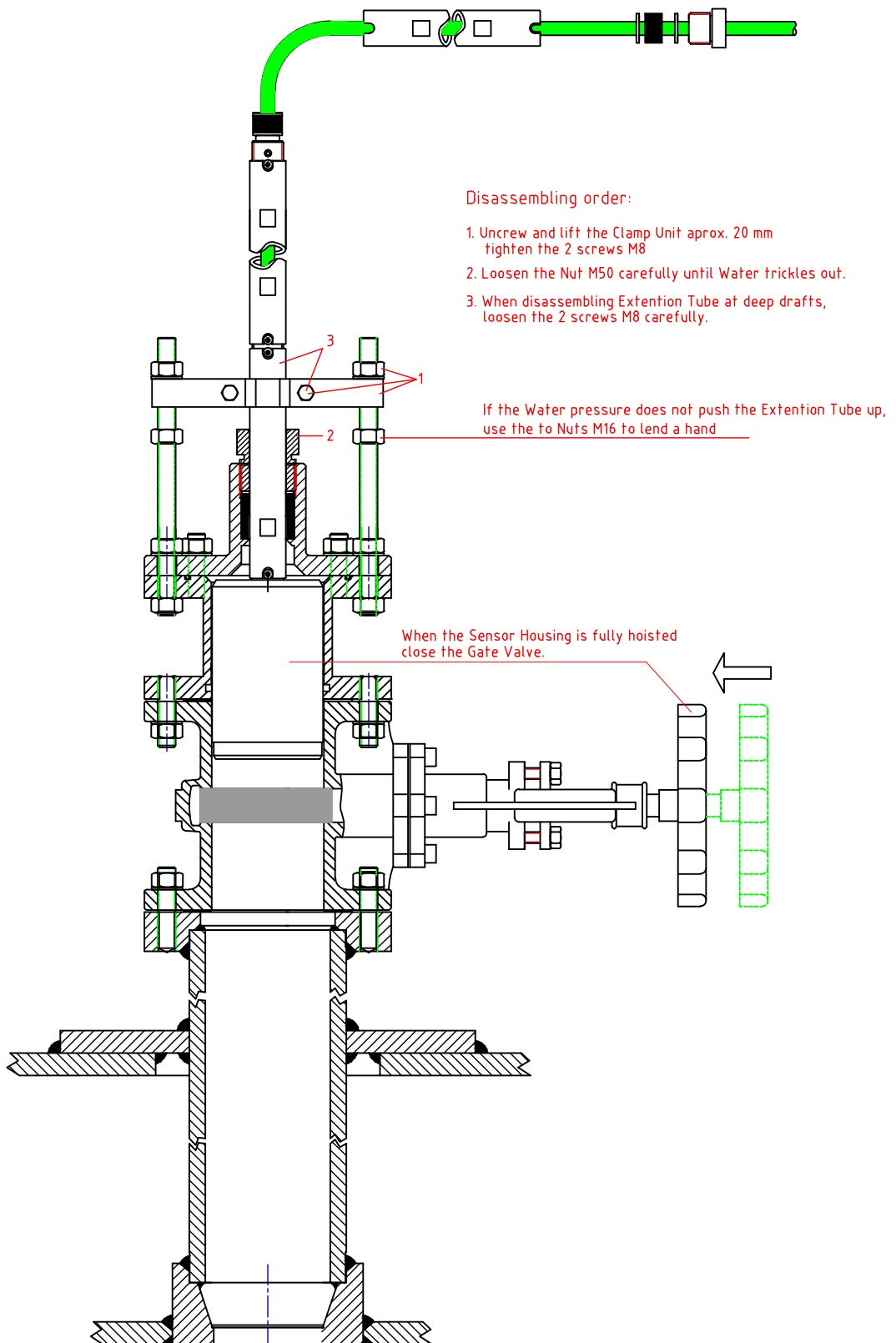
After the ship is afloat, it is necessary to let the air out of the Sea Valve.

- Loosen the nut M50, let the air out and tighten nut again.



Check that the transducer/sensor housing, when fully inserted, is flush with the lower surface of the bottom flange.

12. Sensor removal



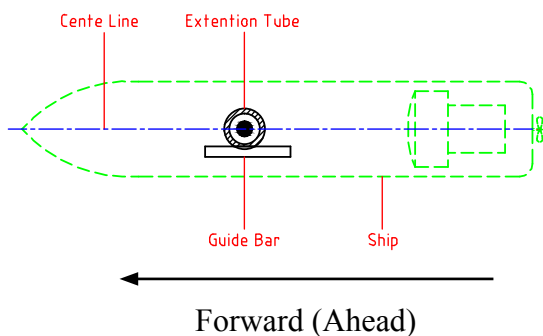
13. Re-installation

Same procedure as first-time mounting.

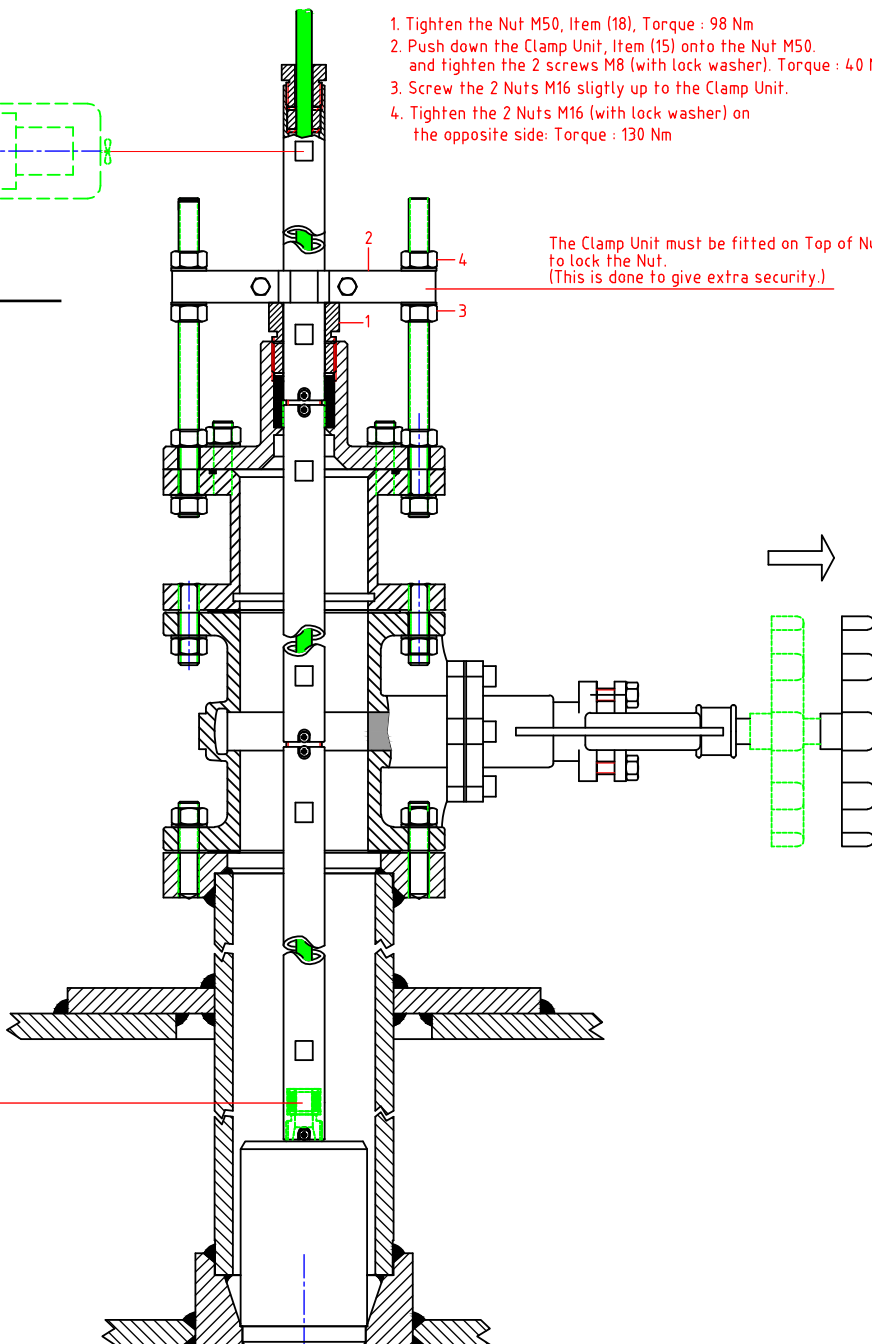
Mounting order Nut M50 and Clamp Unit :

1. Tighten the Nut M50, Item (18), Torque : 98 Nm
2. Push down the Clamp Unit, Item (15) onto the Nut M50 and tighten the 2 screws M8 (with lock washer). Torque : 40 Nm
3. Screw the 2 Nuts M16 slightly up to the Clamp Unit.
4. Tighten the 2 Nuts M16 (with lock washer) on the opposite side: Torque : 130 Nm

The Clamp Unit must be fitted on Top of Nut M50 to lock the Nut.
(This is done to give extra security.)



To be greased with Silicone Grease 6014 or equal



14. DB-100 Sensors

All units premounted by Skipper Electronics

1	2	3	4	5	6	7	8		
				RevNo	Revision note		Date	Signature	Checked

Transducer for echo sounder

ETN050G 50kHz 25m cable

ETN050XG 50kHz 40m cable

ETN200SG 200kHz 25m cable

ETN200SXG 200kHz 40m cable

Ring J90 DIN 472 A4 St. steel

Cover DB-2023-Rev-02

Press Element DB-2041-Rev-02

Housing DB-2022-Rev-00

ETN050BEL 50kHz 25m cable

ETN050BELX 50kHz 40m cable

ETN200FS 200kHz 25m cable

ETN200FSX 200kHz 40m cable

Transducer for echo sounder with Ice Protection

ETN050XGI 50kHz 40m cable

ETN050GI 50kHz 25m cable

Ring J90 DIN 472 A4 St. steel

Cover DB-2023-Rev-02

Press Element DB-2049-Rev-01

Housing DB-2022-Rev-00

ETN050BELX 50kHz 40m cable

ETN050BEL 50kHz 25m cable

Protection Plate DB-2050-Rev-00

Doppler log sensor
DL850S27G-LA
DL850S27G-SA

Lock Nut M8 DIN 985 St. steel A4(2x)

DB-2023-Rev-02

SB-3029-REV-00

TC-2019-Rev-00

Scale: 2:1

Notice Stud hole M4

Electro magnetic log sensor
EML224SDB-SB

40m

Screw M5 x 20 DIN 912(4x)

Washer M5 DIN127B

DB-2047-Rev-01

EML224 Sensor

O-ring 59,69mm x 5,33

Grease on O-ring

Cross-cut A-A

Notice Stud hole M4

Ahead

Before inserting the Sensor, be sure that the Ahead Mark is in thigt position.

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by A.Matre	Checked by VF	Approved by - date GT-20061222	Date 30.11.2009
SKIPPER Electronics A/S		File name DB-100-Sensors	Scale
		DB-2046-Rev-03	Sheet 1/1

15. 100 mm Double Bottom Sea Valve

Material Specifications:
 AISI 316L/WND 1.4404 EN10204, 3.1
 Steel DIN17121/ST52.3N
 Surface Treatment: Fluogger 1240 Industry primer. Colour: Red
 Material: Steel DIN17121/ST52.3N

Notes:
 *) Mounted partly on Valve or in mounting Kit: DB-100-XA-M-KIT
 □) Spare parts in service Kit: Module-SB-DB-S-KIT: 1042A
 **) Yard Supply

Dimensions:
 Max 4.46, 550, 190, 180, 170, 220, 72, 22.5°, 22°

Weight: 70 kg (Complete with 3 meter Extension Tube)

Wheel Location Detail: Scale: 1:2, View A

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by	Checked by	Approved by - date	Date
A.Maire			2007.04.12
File name			Scale
Double Bottom Gate Valve			
SKIPPER Electronics AS			Revision
DB-100-XA			10.10.12
			Draw. Edition
			01
			Sheet
			01

Itemref	Quantity	Description	Part No.
42	1	Gate Valve Element	ZCC-01011
36	1	O-ring 139,29 x 3,53	Nitril (NBR 70 shore)
32	2	Spring Washer M8 DIN 127B	A4 St. steel
31	2	Screw M8 x 30 DIN 933	A4 St. steel
30	7	Screw M4 x 8 DIN 7991	A4 St. steel
29	28	Spring Washer M16 DIN 127B	A4 St. steel
28	30	Nut M16 DIN934	A4 St. steel
EM	QTY	DESCRIPTION	MATERIAL PART. NO.